Louisville Metro Air Pollution Control District
850 Barret Avenue
Louisville, Kentucky 40204-1745

# Federally Enforceable District Origin Operating Permit (FEDOOP)

Permit No.: O-1225-18-F (R1) Plant ID: 1225

Effective Date: 1/25/2019 Expiration Date: 1/31/2024
Revision Date: 01/07/2020

Permission is hereby given by the Louisville Metro Air Pollution Control District to operate the process(es) and equipment described herein which are located at:

| | | | |
|---|---|---|---|
| Source: | Atkemix Ten Incorporated-Louisville<br>6100 Camp Ground Road<br>Louisville, KY 40216 | Owner: | Atkemix Ten Incorporated<br><br>1800 Concord Pike, PO Box 15437<br>Wilmington, DE 19850-5437 |

The applicable procedures of District Regulation 2.17 regarding review by the U.S. EPA and public participation have been followed in the issuance of this permit. Based on review of the application on file with the District, permission is given to operate under the conditions stipulated herein. If a renewal permit is not issued prior to the expiration date, the owner or operator may continue to operate in accordance with the terms and conditions of this permit beyond the expiration date, provided that a complete renewal application is submitted to the District no earlier than twelve (12) months and no later than ninety (90) days prior to the expiration date.

Emission limitations to qualify for non-major status:

| Pollutant: | VOC | Single HAP | Total HAP |
|---|---|---|---|
| Tons/year: | <25 | <5 | <12.5 |

Application No.: See **Application and Related Documents** table.
Public Notice Date: 12/18/2018

Permit writer: Martin J. Hazelett

Air Pollution Control Officer
1/7/2020

## Table of Contents

## FEDOOP Permit Revisions/Changes

| Permit No. | Public Notice Date | Issue Date | Change Type | Description/Scope |
|---|---|---|---|---|
| 149-02-F | 06/23/2002 | 08/01/2002 | Initial | Initial Permit Issuance |
| 149-02-F(R1) | 03/01/2013 | 04/18/2013 | Renewal | Scheduled Renewal and incorporation of construction permit 264-01-C(R1) |
| O-1225-15-F | 11/05/2015 | 12/10/2015 | Sig. | Incorporate STAR Exempt limits and remove TAC limits |
| O-1225-18-F | 12/18/2018 | 01/25/2019 | Renewal | Permit Renewal |
| O-1225-18-F (R1) | N/A | 01/07/2020 | Revision | Incorporate replacement of Curtain Area SVE vacuum pump; Updates General Conditions. |

## Construction Permit Summary

| Permit No. | Issue Date | Description |
|---|---|---|
| 264-01-C(R1) | 2/28/2013 | One (1) Production Area SVE (Soil Vapor Extraction), make Roots, model URA1718, capacity 1200 scfm;<br>One (1) Curtain Area SVE, make Rotron Chemical Processing Series, model CP909FJ72WLR, capacity 600 scfm; and<br>One (1) Air Stripper, make New York Blower Company, model 404 SER 35 GIDH ARR'GT.8, capacity 7200 acfm at 36" WG; all venting to<br>One (1) dual-bed Carbon Absorption System, make VIC Environmental Systems, model 5108 AD Carbon Adsorption System, capacity 7200 scfm at 70°F, stack ID |

## Application and Related Documents

| Document Number | Date Received | Description |
|---|---|---|
| N/A | 08/31/2001 | FEDOOP Permit – 149-02-F |
| 17756 | 05/07/2007 | FEDOOP Permit – 149-02-F(R1) |
| 73295 | 08/31/2015 | FEDOOP Permit – O-1225-15-F – STAR Exempt |
| 89710 | 12/21/2017 | Atkemix Ten Inc (1225) link for APCD permit application |
| 90036 | 01/04/2018 | Re 20171221 Atkemix Ten Inc (1225) link for APCD permit application |
| 90349 | 02/01/2018 | Re 20171221 Atkemix Ten Inc (1225) link for APCD permit application |

| Document Number | Date Received | Description |
|---|---|---|
| 90350 | 20/02/2018 | Re 20171221 Atkemix Ten Inc (1225) link for APCD permit application |
| 9094 | 02/28/2018 | Application AP100A, C, D, E, H, J, K, P, and payment 1225 |
| 91027 | 03/06/2018 | Request for certificate of authorization existence |
| 91335 | 03/23/2018 | Atkemix Ten Inc. LAPCD-requested supplemental info |
| 92823 | 07/02/2018 | Atkemix Ten Inc Final information for permit renewal completion |
| 93728 | 08/24/2018 | Atkemix Ten Inc Final information for permit renewal completion |
| 94119 | 08/30/2018 | Atkemix Ten Inc Final information for permit renewal completion |
| 95377 | 10/29/2018 | Approved Atkemix PTE Plantwide |
| 96215 | 11/27/2018 | Pre-Draft permit sent to company for review |
| 96506 | 12/14/2018 | Company comments on pre-draft |
| 96589 | 01/02/2019 | Official Company comments on draft permit |
| 124933,<br>125971,<br>125972, 125976,<br>126075 | 11/21/2019<br>12/05/2019<br>12/06/2019<br>12/10/2019 | Correspondences related to construction application for Curtain Area SVE (E2) modification |
| 126445 | 12/18/2019 | Construction application for new Curtain Area SVE vacuum pump |
| 126510 | 12/18/2019 | Approval of construction application for new Curtain Area SVE vacuum pump |

## Abbreviations and Acronyms

AP-42 - AP-42**,** *Compilation of Air Pollutant Emission Factors, published by U.S.EPA*
APCD - Louisville Metro Air Pollution Control District
BAC - Benchmark Ambient Concentration
BACT - Best Available Control Technology
Btu - British thermal unit
CEMS - Continuous Emission Monitoring System
CFR - Code of Federal Regulations
CO - Carbon monoxide
District - Louisville Metro Air Pollution Control District
EA - Environmental Acceptability
gal - U.S. fluid gallons
GHG - Greenhouse Gas
HAP - Hazardous Air Pollutant
Hg - Mercury
hr - Hour
in. - Inches
lbs - Pounds
l - Liter
LMAPCD - Louisville Metro Air Pollution Control District
mmHg - Millimeters of mercury column height
MM - Million
NAICS - North American Industry Classification System
$NO_x$ - Nitrogen oxides
PM - Particulate Matter
$PM_{10}$ - Particulate Matter less than 10 microns
$PM_{2.5}$ - Particulate Matter less than 2.5 microns
ppm - parts per million
PSD - Prevention of Significant Deterioration
psia - Pounds per square inch absolute
QA - Quality Assurance
RACT - Reasonably Available Control Technology
SIC - Standard Industrial Classification
SIP - State Implementation Plan
$SO_2$ - Sulfur dioxide
STAR - Strategic Toxic Air Reduction
TAC - Toxic Air Contaminant
UTM - Universal Transverse Mercator
VOC - Volatile Organic Compound
w.c. - Water column
year - Any period of twelve consecutive months, unless "calendar year" is specified
yr - Year, or any 12 consecutive-month period, as determined by context

## Preamble

This permit covers only the provisions of Kentucky Revised Statutes Chapter 77 Air Pollution Control, the regulations of the Louisville Metro Air Pollution Control District (District) and, where appropriate, certain federal regulations. The issuance of this permit does not exempt any owner or operator to whom it has been issued from prosecution on account of the emission or issuance of any air contaminant caused or permitted by such owner or operator in violation of any of the provisions of KRS 77 or District regulations. Any permit shall be considered invalid if timely payment of annual fees is not made. The permit contains general permit conditions and specific permit conditions. General conditions are applicable unless a more stringent requirement is specified elsewhere in the permit.

## General Conditions

G1. The owner or operator shall comply with all General Conditions herein and all terms and conditions in the referenced process/process equipment list.

G2. All terms and conditions in this FEDOOP are enforceable by EPA, except those terms and conditions specified as District-only enforceable, and those which are not required pursuant to the Clean Air Act Amendments of 1990 (CAAA) or any of the Act's applicable requirements.

G3. All application forms, reports, compliance certifications, and other relevant information submitted to the District shall be certified by a responsible official. If a change in the responsible official (RO) occurs during the term of this permit, or if an RO is added, the owner or operator shall provide written notification (Form AP-100A) to the District within 30 calendar days of such change or addition.

G4. The owner or operator shall submit an annual compliance certification, signed by the responsible official, to the District, on or before April 15 of the year following the year for which the certification applies. This certification shall include completion of District Form 9440-O.

G5. Periodic testing, instrumental monitoring, or non-instrumental monitoring, which may include record keeping, shall be performed to the extent necessary to yield reliable data for purposes of demonstrating continuing compliance with the terms and conditions of this permit.

G6. The owner or operator shall retain all records required by the District or any applicable requirement, including all required monitoring data and supporting information, for a period of five years from the date of the monitoring, sampling, measurement, report, or application, unless a longer time period for record retention is required by the District or an applicable requirement. Records shall be retrievable within a reasonable time and made available to the District, Kentucky Division for Air Quality, or the EPA upon request.

G7. The owner or operator shall provide written notification to the District, and receive approval, prior to making any changes to existing equipment or processes that would result in emissions of any regulated pollutant in excess of the allowable emissions specified in this permit.

G8. This permit may be reissued, revised, reopened, or revoked pursuant to District Regulation 2.17. Repeated violations of permit conditions are sufficient cause for revocation of this permit. The filing of a request by the owner or operator for any reissuance, revision, revocation, termination, or a notification of planned changes in equipment or processes, or anticipated noncompliance shall not alter any permit requirement.

G9. Except as otherwise specified or limited herein, the owner or operator shall not allow or cause the emissions to equal or exceed either 10 tons per year, or such lesser quantity as the EPA has established by rule, of any one Hazardous Air Pollutant (HAP) or 25 tons per year of all HAPs combined. Fugitive HAP emissions shall be included in this limit. HAPs are listed in section 112(b) of the CAAA and as amended in 40 CFR 63, Subpart C.

G10. Except as otherwise specified or limited herein, the owner or operator shall not allow or cause the emissions to equal or exceed 100 tons per year of any regulated pollutant, including particulate matter, $PM_{10}$, $PM_{2.5}$, sulfur dioxide, carbon monoxide, nitrogen oxides, lead, hydrogen sulfide, gaseous fluorides, total fluorides, or Volatile Organic Compounds (VOC); any pollutant subject to any standard in District Regulation 7.02; or any substance listed in sections 112(r), 602(a) and 602(b) of the CAAA. Fugitive emissions shall be included in these limits for source categories listed in District Regulation 2.16.

G11. Unless specified elsewhere in this permit, the owner or operator shall complete required monthly record keeping within 30 days following the end of each calendar month.

G12. Unless specified elsewhere in this permit, the owner or operator shall submit annual reports demonstrating compliance with the emission limitations specified. The report shall contain monthly and consecutive 12-month totals for each pollutant that has a federally enforceable limitation on the potential to emit. All reports shall include the company name, plant ID number, and the beginning and ending date of the reporting period. The compliance reports shall clearly identify any deviation from a permit requirement or a declaration that there were no such deviations. All compliance reports shall include the following per Regulation 2.17, section 3.5.

- A certification statement: "Based on information and belief formed after reasonable inquiry, I certify that the statements and information in this document are true, accurate, and complete", and
- The signature and title of a responsible official of the company.

The annual report must be postmarked no later than March 1 of the year following the calendar year covered in the annual report.

G13. The owner or operator shall comply with all applicable requirements of the following federally enforceable District Regulations:

| Regulation | Title |
|---|---|
| 1.01 | General Application of Regulations and Standards |
| 1.02 | Definitions |
| 1.03 | Abbreviations and Acronyms |
| 1.04 | Performance Tests |
| 1.05 | Compliance With Emissions Standards and Maintenance Requirements |
| 1.06 | Source Self-Monitoring, Emission Inventory Development and Reporting |
| 1.07 | Excess Emissions During Startups, Shutdowns, and Upset Conditions |
| 1.08 | Administrative Procedures |
| 1.09 | Prohibition of Air Pollution |
| 1.10 | Circumvention |
| 1.11 | Control of Open Burning |
| 1.14 | Control of Fugitive Particulate Emissions |
| 1.18 | Rule Effectiveness |
| 1.19 | Administrative Hearings |
| 2.01 | General Application (Permit Requirements) |
| 2.02 | Air Pollution Regulation Requirements and Exemptions |
| 2.03 | Authorization to Construct or Operate; Demolition/Renovation Notices and Permit Requirements |
| 2.06 | Permit Requirements – Other Sources |
| 2.09 | Causes for Permit Modification, Revocation, or Suspension |
| 2.10 | Stack Height Considerations |
| 2.11 | Air Quality Model Usage |
| 3.01 | Ambient Air Quality Standards |
| 4.01 | General Provisions for Emergency Episodes |
| 4.02 | Episode Criteria |
| 4.03 | General Abatement Requirements |
| 4.04 | Particulate and Sulfur Dioxide Reduction Requirements |
| 4.05 | Hydrocarbon and Nitrogen Oxides Reduction Requirements |
| 4.06 | Carbon Monoxide Reduction Requirements |
| 4.07 | Episode Reporting Requirements |
| 6.01 | General Provisions (Existing Affected Facilities) |
| 6.02 | Emission Monitoring for Existing Sources |
| 7.01 | General Provisions (New Affected Facilities) |

G14. The owner or operator shall comply with all applicable requirements of the following District-only enforceable regulations:

| Regulation | Title |
|---|---|
| 1.12 | Control of Nuisances |
| 1.13 | Control of Objectionable Odors |
| 2.08 | Emission Fee, Permit Fees and Permit Renewal Procedures |
| 2.17 | Federally Enforceable District Origin Operating Permits |
| 5.00 | Definitions |
| 5.01 | General Provisions |
| 5.02 | Adoption and Incorporation by Reference of National Emission Standards for Hazardous Air Pollutants |
| 5.14 | Hazardous Air Pollutants and Source Categories |
| 5.20 | Methodology for Determining Benchmark Ambient Concentration of a Toxic Air Contaminant |
| 5.21 | Environmental Acceptability for Toxic Air Contaminants |
| 5.22 | Procedures for Determining the Maximum Ambient Concentration of a Toxic Air Contaminant |
| 5.23 | Categories of Toxic Air Contaminants |
| 7.02 | Adoption and Incorporation by Reference of Federal New Source Performance Standards |

G15. The owner or operator shall submit emission inventory reports, as required by Regulation 1.06, if so notified by the District.

G16. The owner or operator shall submit timely reports of abnormal conditions or operational changes that may cause excess emissions, as required by Regulation 1.07.

G17. Applications, reports, test data, monitoring data, compliance certifications, and any other document required by this permit shall be submitted to:

***Air Pollution Control District***
***701 W. Ormsby Avenue, Suite 303***
***Louisville, Kentucky 40203-3137***

## Emission Unit U1: Soil and Groundwater Remediation Operation

### U1 Applicable Regulations:

| FEDERALLY ENFORCEABLE REGULATIONS | | |
|---|---|---|
| **Regulation** | **Title** | **Applicable Sections** |
| 7.25 | Standards of Performance for New Sources Using Volatile Organic Compounds | 1 through 5 |

| DISTRICT-ONLY ENFORCEABLE REGULATIONS | | |
|---|---|---|
| **Regulation** | **Title** | **Applicable Sections** |
| 5.00[1] | Definitions | 1 and 2 |

### U1 Equipment:

| Emission Point | Description | Install Date | Applicable Regulations | Control ID | Release ID |
|---|---|---|---|---|---|
| E1 | One (1) Production Area SVE (Soil Vapor Extraction), make Roots, model URA1718, 1200 acfm | 8/6/1996; modified 7/23/2001 | 7.25 | C1 | S1 |
| E2 | One (1) Curtain Area SVE[2] (Soil Vapor Extraction), equipped with a positive displacement rotary lobe vacuum pump, make Howden Roots, model 615 URAI, capacity 989 scfm | 8/6/1996; modified 7/23/2001, 2nd modification 12/2019 | 7.25 | C1 | S1 |
| E3 | One (1) Air Stripper, make New York Blower Company, model 404 SER 35 GIDH ARR'GT.8, 7200 acfm at 36" WG | 8/6/1996; modified 7/23/2001 | 7.25 | C1 | S1 |

[1] On August 31, 2015, the source requested a plantwide emissions limits of 25 ton/yr for the pollutant VOC, 12.5 ton/yr for total HAPs, and 5.0 ton/yr of largest single HAP, to become a FEDOOP STAR Exempt source per Regulation 5.00, section 1.13.5.

[2]The Curtain Side SVE was originally permitted with its own carbon adsorption system (removed prior to 2007) under Construction Permit 250-01 and the corresponding Operating Permit 150-02.

## U1 Control Devices:

| Control ID | Description | Control Efficiency | Performance Indicator |
|---|---|---|---|
| C1 | One (1) dual-bed Carbon Absorption System, make VIC Environmental Systems, model 5108 AD Carbon Adsorption System, 7200 acfm at 70°F | 95% | Air Flow in ACFM |

## U1 Specific Conditions

**S1. Standards**
[Regulation 2.17, section 5.1]

**a. HAP**

i. The owner or operator shall not allow plantwide single HAP emissions to equal or exceed 5 tons per consecutive 12-month period.
[Regulation 2.17, Section 5.1]

ii. The owner or operator shall not allow plantwide total HAP emissions to equal or exceed 12.5 tons per consecutive 12-month period.
[Regulation 2.17, Section 5.1]

iii.

**b. VOC**

i. The owner or operator shall not allow plantwide VOC emissions to equal or exceed 25 tons per consecutive 12-month period.
[Regulation 2.17, Section 5.1]

ii. The owner or operator shall not allow plantwide VOC emissions to equal or exceed 25 tons per consecutive 12-month period.
[Regulation 7.25, Section 3.1][3]

**S2. Monitoring and Record Keeping**
[Regulation 2.17, section 5.2]

The owner or operator shall maintain the following records for a minimum of 5 years and make the records readily available to the District upon request.

**a. HAP**

i. The owner or operator shall, monthly, sample, analyze, and record the inlet and outlet exhaust gas stream to determine the content of individual HAPs.

ii. The owner or operator shall, daily, maintain records of the hours of operation for each operating day.

[3] The District has determined that the carbon adsorption units meet the BACT requirement for compliance with Regulations 7.25.

iii. The owner or operator shall, monthly, maintain records of the average air flow in units of ACFM, for the previous calendar month.

iv. The owner or operator shall, monthly, calculate and record the plantwide emissions of each individual HAP, and total HAP for the previous calendar month and for the previous consecutive 12-month period based on the results of the monthly sampling and analysis.

**b. VOC**

i. The owner or operator shall, monthly, sample, analyze, and record the inlet and outlet exhaust gas stream to determine the content of VOC.

ii. The owner or operator shall, daily, maintain records of the hours of operation for each operating day.

iii. The owner or operator shall, monthly, maintain records of the average air flow in units of ACFM, for the previous calendar month.

iv. The owner or operator shall, monthly, calculate and record the emissions of VOC for the previous calendar month and for the previous consecutive 12-month period based on the results of the monthly sampling and analysis.

**S3. Reporting**
[Regulation 2.17, section 5.2]

**a. HAP**

i. The owner or operator shall include in the annual report the monthly and consecutive 12-month emissions for each individual HAP, and total HAP.

**b. VOC**

i. The owner or operator shall include in the annual report the monthly and consecutive 12-month emissions for VOC.

## Insignificant Activities

| Equipment | Qty. | PTE (tpy) | Regulation Basis |
|---|---|---|---|
| VOC Storage Tanks 250 gal or less | 1 | 0.01 VOC | Regulation 1.02, Appendix A |
| E4 Boiler, Power Flame Burner, C2-G-20A, natural gas 2.5 MMBtu/hr, Columbia Boiler, Model MPH-50, Firebox HX (carbon regeneration) | 1 | 1.07 NOx<br>0.006 $SO_2$<br>0.059 VOC | Regulation 1.02, Appendix A. |
| Brazing, Soldering, or Welding Equip. | 1 | 0.01 PM10; 0.001 total HAPs | Regulation 1.02, Appendix A |
| Organics Tank (T202) carbon steel, glass lined, closed tank, vented to C1, 5000 gallons | 1 | 0.14 VOC; 0.15 total HAPs | Regulation 1.02, Appendix A |

1) Insignificant activities identified in District Regulation 1.02, Appendix A, may be subject to size or production rate disclosure requirements.

2) Insignificant activities identified in District Regulation 1.02, Appendix A shall comply with generally applicable requirements.

3) The owner or operator shall annually submit an updated list of insignificant activities that occurred during the preceding year, with the compliance certification due April 15th.

4) Emissions from Insignificant Activities shall be reported in conjunction with the reporting of annual emissions of the facility as required by the District.

5) The owner or operator may elect to monitor actual throughputs for each of the insignificant activities and calculate actual annual emissions or use Potential to Emit (PTE) as the annual emissions for each piece of equipment.

6) The District has determined that no monitoring, record keeping, or reporting requirements apply to the insignificant activities listed, except for the equipment that has an applicable regulation and permitted under an insignificant activity (IA) unit.

## Emission Unit IA1: Boiler

### IA1 Applicable Regulations:

| FEDERALLY ENFORCEABLE REGULATIONS | | |
|---|---|---|
| **Regulation** | **Title** | **Applicable Sections** |
| 7.06 | Standards of Performance for New Indirect Heat Exchangers | 1 through 4 |

### IA1 Equipment:

| Emission Point | Description | Install Date | Applicable Regulations | Control ID | Release ID |
|---|---|---|---|---|---|
| E4 | Boiler, Power Flame Burner, C2-G-20A, natural gas 2.5 MMBtu/hr, Columbia Boiler, Model MPH-50, Firebox HX | 2015 | 7.06 | NA | S2 |

## IA1 Specific Conditions

**S1. Standards**
[Regulation 2.17, section 5.1]

**a. Opacity**

i. The owner or operator shall not cause to be discharged into the atmosphere from any affected facility particulate matter emissions which exhibit greater than 20% opacity. [Regulation 7.06, section 4.2]

**b. PM**

i. The owner or operator shall not cause to be discharged into the atmosphere from that affected facility particulate matter in excess of 0.56 pounds per million BTU actual total heat input.
[Regulation 7.06, section 4.1.1]

**c. $SO_2$**

i. The owner or operator shall not cause to be discharged into the atmosphere from that affected facility any gases that contain sulfur dioxide in excess of 1.0 pounds per million BTU actual total heat input for combustion of liquid and gaseous fuels.
[Regulation 7.06, section 5.1.1]

**S2. Monitoring and Record Keeping**
[Regulation 2.17, section 5.2]

The owner or operator shall maintain the following records for a minimum of five years and make the records readily available to the District upon request

**a. Opacity**

i. There are no routine monitoring and record keeping requirements.[4]

**b. PM**

i. There are no routine monitoring and record keeping requirements.[5]

[4] A determination has been made that a natural gas-fired boiler should inherently meet the opacity standard.
[5] A one-time compliance demonstration using AP-42 emission factors has been performed for PM and $SO_2$ emissions. This demonstration showed that emission standards cannot be exceeded when combusting natural gas. Therefore, there are no monitoring, recordkeeping, or reporting requirements for PM and $SO_2$ for natural gas.

**c. $SO_2$**

i. There are no routine monitoring and record keeping requirements.[5]

## S3. Reporting

[Regulation 2.17, section 5.2]

The owner or operator shall timely report abnormal conditions or operational changes which may cause excess emissions.

**a. Opacity**

i. The are no routine reporting requirements

**b. PM**

i. The are no routine reporting requirements

**c. $SO_2$**

i. The are no routine reporting requirements

## Fee Comment

1. On May 15, 2013, the Board approved revisions to Regulation 2.08, which implemented a new fee structure. As a result, Atkemix Ten Incorporated- Louisville will be required to pay annual fees.

2. The Administrative Revision fee for O-1225-18-F (R1) is $546.29.

## Attachment A: Calculation Methodology and Emission Factors

The owner or operator shall calculate emissions using emission factors and equations in this attachment unless other methods are approved in writing by the District.

### E1, E2, E3: Soil and Groundwater Remediation Operation

The emission calculations are based upon the concentration of pollutant measured in the air stream each month, and the average air flow for each month

Equation to calculate total tons per month of VOC and HAPs:

Tons/month = [(Operating time in days)*(1,440 min/day)*(Flow in $ft^3$/min)*(**Concentration in PPMV**/1,000,000)*(MW in lb/lb mole)] / [(385.6 $ft^3$/lb mole)*(2000 lb/ton)][6]

MW- molecular weight

Tons/month = [(Operating time in days)*(1,440 min/day)*(Flow in $ft^3$/min)*(**Concentration in ug/$m^3$**)*($m^3$/35.32 $ft^3$)*(lb/(453.6 x $10^6$ ug))] / [(2000 lb/ton)][6]

E4: Boiler Emission Factors

| Emission Source | Pollutant | Natural Gas Emission Factor ($lb/10^6$ scf natural gas combusted) | | Emission Factor Source |
|---|---|---|---|---|
| | | Uncontrolled | Controlled | |
| E4 | NOx | 100 | 100 | AP-42, 1.4-1 |
| | CO | 84 | 84 | AP-42, 1.4-1 |
| | PM | 0.52 | 0.52 | Roy Huntley, EPA |
| | PM condensable | 0.32 | 0.32 | Roy Huntley, EPA |
| | $PM_{10}$ | 0.52 | 0.52 | Roy Huntley, EPA |
| | $PM_{2.5}$ | 0.43 | 0.43 | Roy Huntley, EPA |
| | $SO_2$ | 0.6 | 0.6 | AP-42, 1.4-2 |
| | VOC | 5.5 | 5.5 | AP-42, 1.4-2 |
| | Lead | 0.0005 | 0.0005 | AP-42, 1.4-3 |
| | $NH_3$ | 3.2 | 3.2 | EPA WebFIRE |

[6] Measured airflow in ACFM shall be corrected to 68 degrees Fahrenheit for this calculation

E = (X) * (EF lb/$10^6$ scf) * (1 ton/2000 lb.)
Where: E = emissions (tons)
X = the amount of natural gas combusted ($10^6$ scf)
[AP-42 EF (lb/MMBtu) converted to (lb/$10^6$ scf) natural gas combusted]

## E4: Boiler Emission Factors

| Emission Source | Individual HAP | CAS | Natural Gas Emission Factor (lb/$10^6$ scf natural gas combusted) | | Emission Factor Source |
|---|---|---|---|---|---|
| | | | Uncontrolled | Controlled | |
| E4 | Benzene | 71-43-2 | 2.10E-03 | 2.10E-03 | AP-42, 1.4-3 |
| | Dichlorobenzene | 25321-22-6 | 1.20E-03 | 1.20E-03 | AP-42, 1.4-3 |
| | Formaldehyde | 50-00-0 | 7.50E-02 | 7.50E-02 | AP-42, 1.4-3 |
| | Hexane | 110-54-3 | 1.80E+00 | 1.80E+00 | AP-42, 1.4-3 |
| | Toluene | 108-88-3 | 3.40E-03 | 3.40E-03 | AP-42, 1.4-3 |
| | Total POMs | | 6.98E-04 | 6.98E-04 | |
| | 2-Methylnaphthalene (POM) | 91-57-6 | 2.40E-05 | 2.40E-05 | AP-42, 1.4-3 |
| | 3-Methylchloranthrene (POM) | 56-49-5 | 1.80E-06 | 1.80E-06 | AP-42, 1.4-3 |
| | DMBA (POM) | 57-97-6 | 1.60E-05 | 1.60E-05 | AP-42, 1.4-3 |
| | Acenaphthene (POM) | 83-32-9 | 1.80E-06 | 1.80E-06 | AP-42, 1.4-3 |
| | Acenaphthylene (POM) | 208-96-8 | 1.80E-06 | 1.80E-06 | AP-42, 1.4-3 |
| | Anthracene (POM) | 120-12-7 | 2.40E-06 | 2.40E-06 | AP-42, 1.4-3 |
| | Benz(a)anthracene (POM) | 56-55-3 | 1.80E-06 | 1.80E-06 | AP-42, 1.4-3 |
| | Benzo(a)pyrene (POM) | 50-32-8 | 1.20E-06 | 1.20E-06 | AP-42, 1.4-3 |
| | Benzo(b)fluoranthene (POM) | 205-99-2 | 1.80E-06 | 1.80E-06 | AP-42, 1.4-3 |
| | Benzo(g,h,i)perylene (POM) | 191-24-2 | 1.20E-06 | 1.20E-06 | AP-42, 1.4-3 |
| | Benzo(k)fluoranthene (POM) | 205-82-3 | 1.80E-06 | 1.80E-06 | AP-42, 1.4-3 |
| | Chrysene (POM) | 218-01-9 | 1.80E-06 | 1.80E-06 | AP-42, 1.4-3 |
| | Dibenzo(a,h)anthracene (POM) | 53-70-3 | 1.20E-06 | 1.20E-06 | AP-42, 1.4-3 |
| | Fluoranthene (POM) | 206-44-0 | 3.00E-06 | 3.00E-06 | AP-42, 1.4-3 |
| | Fluorene (POM) | 86-73-7 | 2.80E-06 | 2.80E-06 | AP-42, 1.4-3 |
| | Indeno(1,2,3-cd) pyrene (POM) | 193-39-5 | 1.80E-06 | 1.80E-06 | AP-42, 1.4-3 |
| | Naphthalene (POM) | 91-20-3 | 6.10E-04 | 6.10E-04 | AP-42, 1.4-3 |
| | Phenanathrene (POM) | 85-01-8 | 1.70E-05 | 1.70E-05 | AP-42, 1.4-3 |
| | Pyrene (POM) | 129-00-0 | 5.00E-06 | 5.00E-06 | AP-42, 1.4-3 |
| | Arsenic | 7440-38-2 | 2.00E-04 | 2.00E-04 | AP-42, 1.4-4 |
| | Beryllium | 7440-41-7 | 1.20E-05 | 1.20E-05 | AP-42, 1.4-4 |
| | Cadmium | 7440-43-9 | 1.10E-03 | 1.10E-03 | AP-42, 1.4-4 |
| | Chromium | 7440-47-3 | 1.40E-03 | 1.40E-03 | AP-42, 1.4-4 |
| | Cobalt | 7440-48-4 | 8.40E-05 | 8.40E-05 | AP-42, 1.4-4 |

| Emission Source | Individual HAP | CAS | Natural Gas Emission Factor ($lb/10^6$ scf natural gas combusted) | | Emission Factor Source |
|---|---|---|---|---|---|
| | | | Uncontrolled | Controlled | |
| | Manganese | 7439-96-5 | 3.80E-04 | 3.80E-04 | AP-42, 1.4-4 |
| | Mercury | 7439-97-6 | 2.60E-04 | 2.60E-04 | AP-42, 1.4-4 |
| | Nickel | 7440-02-0 | 2.10E-03 | 2.10E-03 | AP-42, 1.4-4 |
| | Selenium | 7782-49-2 | 2.40E-05 | 2.40E-05 | AP-42, 1.4-4 |

$E_{(HAP)} = (X)\ (EF\ lb/10^6\ scf)\ (1\ ton/2000\ lb.)$

Where: $E_{(HAP)}$ = emissions (tons)
X = the amount of natural gas combusted ($10^6$ scf)
[AP-42 EF (lb/MMBtu) converted to ($lb/10^6$ scf) natural gas combusted]

## Emission Factors for Tanks

| Emission Source | Pollutant | Emission Factor (lb/gallon) | Emission Factor Source |
|---|---|---|---|
| VOC Storage Tanks 250 gal or less | VOC | N/A | Emissions accounted for in the working losses for the storage tanks below using AP-42 evaporative losses. |
| Organics Tank (T202) carbon steel, glass lined, closed tank, vented to C1, 5000 gallons | VOC | N/A | Emissions accounted for in the working losses for the storage tanks below using AP-42 evaporative losses. |

## Welding Emission Factors

| Emission Source | Pollutant | Emission Factor Uncontrolled (0.1 lb/1000 lb of electrode consumed) | Emission Factor Source |
|---|---|---|---|
| E3-E17 | PM | 52 | AP-42, 12.9-1 |
| | $PM_{10}$ | 52 | AP-42, 12.9-1 |
| | $PM_{2.5}$ | 52 | AP-42, 12.9-1 |
| | Chromium | 0.01 | AP-42, 12.9-2 |
| | Cobalt | 0.01 | AP-42, 12.9-2 |
| | Manganese | 3.18 | AP-42, 12.9-2 |
| | Nickel | 0.01 | AP-42, 12.9-2 |

| Emission Source | Pollutant | Emission Factor Uncontrolled (0.1 lb/1000 lb of electrode consumed) | Emission Factor Source |
|---|---|---|---|
| | Phosphorous | 0.08 | Typical welding rod SDS with 0.008% Phosphorous |

E = (X) * EF*(0.1 **lb/1000 lb electrode consumed**) * (1 ton/2000 lb.)
Where: E = emissions (tons)
X = **lb electrode consumed**

## Attachment B: PTE calculated for IA Equipment

## PTE E4: Boiler

| Individual Pollutant | CAS | PTE (tpy) | Average Monthly PTE (ton/month) |
|---|---|---|---|
| NOx | N/A | 1.074 | 0.089 |
| CO | N/A | 0.902 | 0.075 |
| PM | N/A | 0.006 | 4.65E-04 |
| PM condensable | N/A | 0.003 | 2.86E-04 |
| PM10 | N/A | 0.006 | 4.65E-04 |
| PM2.5 | N/A | 0.005 | 3.85E-04 |
| SO2 | N/A | 0.006 | 0.001 |
| VOC | N/A | 0.059 | 0.005 |
| Lead | N/A | 5.37E-06 | 4.47E-07 |
| Ammonia (NH3) | N/A | 0.034 | 0.003 |
| Total HAP | N/A | 0.020 | 0.002 |

| Individual HAPs | CAS | PTE (tpy) | Average Monthly PTE (ton/mo) |
|---|---|---|---|
| Benzene | 71-43-2 | 2.25E-05 | 1.88E-06 |
| Dichlorobenzene | 25321-22-6 | 1.29E-05 | 1.07E-06 |
| Formaldehyde | 50-00-0 | 8.05E-04 | 6.71E-05 |
| Hexane | 110-54-3 | 1.93E-02 | 1.61E-03 |
| Toluene | 108-88-3 | 3.65E-05 | 3.04E-06 |
| Total POMs | | 7.50E-06 | 6.25E-07 |
| 2-Methylnaphthalene (POM) | 91-57-6 | 2.58E-07 | |
| 3-Methylchloranthrene (POM) | 56-49-5 | 1.93E-08 | |
| DMBA (POM) | 57-97-6 | 1.72E-07 | |
| Acenaphthene (POM) | 83-32-9 | 1.93E-08 | |
| Acenaphthylene (POM) | 208-96-8 | 1.93E-08 | |
| Anthracene (POM) | 120-12-7 | 2.58E-08 | |
| Benz(a)anthracene (POM) | 56-55-3 | 1.93E-08 | |
| Benzo(a)pyrene (POM) | 50-32-8 | 1.29E-08 | |
| Benzo(b)fluoranthene (POM) | 205-99-2 | 1.93E-08 | |
| Benzo(g,h,i)perylene (POM) | 191-24-2 | 1.29E-08 | |
| Benzo(k)fluoranthene (POM) | 205-82-3 | 1.93E-08 | |

| Individual HAPs | CAS | PTE (tpy) | Average Monthly PTE (ton/mo) |
|---|---|---|---|
| Chrysene (POM) | 218-01-9 | 1.93E-08 | |
| Dibenzo(a,h)anthracene (POM) | 53-70-3 | 1.29E-08 | |
| Fluoranthene (POM) | 206-44-0 | 3.22E-08 | |
| Fluorene (POM) | 86-73-7 | 3.01E-08 | |
| Indeno(1,2,3-cd) pyrene (POM) | 193-39-5 | 1.93E-08 | |
| Naphthalene (POM) | 91-20-3 | 6.55E-06 | |
| Phenanathrene (POM) | 85-01-8 | 1.83E-07 | |
| Pyrene (POM) | 129-00-0 | 5.37E-08 | |
| Arsenic | 7440-38-2 | 2.15E-06 | 1.79E-07 |
| Beryllium | 7440-41-7 | 1.29E-07 | 1.07E-08 |
| Cadmium | 7440-43-9 | 1.18E-05 | 9.84E-07 |
| Chromium | 7440-47-3 | 1.50E-05 | 1.25E-06 |
| Cobalt | 7440-48-4 | 9.02E-07 | 7.51E-08 |
| Manganese | 7439-96-5 | 4.08E-06 | 3.40E-07 |
| Mercury | 7439-97-6 | 2.79E-06 | 2.33E-07 |
| Nickel | 7440-02-0 | 2.25E-05 | 1.88E-06 |
| Selenium | 7782-49-2 | 2.58E-07 | 2.15E-08 |

## PTE Tanks

## IA Organics Tank (T202) 5000 gallons

| Individual Pollutants | CAS | PTE (tpy) | Average Monthly PTE (ton/month) |
|---|---|---|---|
| HAP | N/A | 0.15 | 0.013 |
| VOC | N/A | 0.14 | 0.012 |
| carbon tetrachloride | 56-23-5 | 0.093 | 0.008 |
| chloroform | 67-66-3 | 0.047 | 0.004 |
| tetrachloroethene | 127-18-4 | 0.008 | 0.001 |
| trichloroethene | 79-01-6 | 1.50E-04 | 1.25E-05 |
| cis- 1,2 Dichloroethene | 156-59-2 | 4.90E-04 | 4.08E-05 |
| vinyl chloride | 75-01-4 | 2.92E-03 | 2.43E-04 |

## IA VOC Storage tank (250 gallons or less)

| Individual Pollutants | CAS | PTE (tpy) | Average Monthly PTE (ton/month) |
|---|---|---|---|
| HAP | N/A | 0.01 | 0.001 |
| VOC | N/A | 0.01 | 0.001 |
| carbon tetrachloride | 56-23-5 | 0.005 | 4.19E-04 |
| chloroform | 67-66-3 | 0.003 | 2.11E-04 |
| tetrachloroethene | 127-18-4 | 4.25E-04 | 3.54E-05 |
| trichloroethene | 79-01-6 | 1.00E-05 | 8.33E-07 |
| cis- 1,2 Dichloroethene | 156-59-2 | 2.50E-05 | 2.08E-06 |
| vinyl chloride | 75-01-4 | 1.60E-04 | 1.33E-05 |

PTE Welding

| Individual Pollutants | CAS | PTE (tpy) | Average Monthly PTE (ton/month) |
|---|---|---|---|
| PM/PM10 | N/A | 2.05E-01 | 1.02E-04 |
| Chromium | 7440-47-3 | 3.90E-05 | 1.95E-08 |
| Nickel | 7440-02-0 | 3.90E-05 | 1.95E-08 |
| Manganese | 7439-96-5 | 1.25E-02 | 6.27E-06 |
| Cobalt | 7440-48-4 | 3.90E-05 | 1.95E-08 |
| Phosphorous | 7723-14-0 | 3.15E-03 | 1.58E-06 |